

## PATENT SPECIFICATION

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## (54) SACK

(71) We, KONINKLIJKE EMBAL-  
 LAGE INDUSTRIE VAN LEER B. V., a  
 Dutch Corporate Body of  
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 Netherlands, do hereby declare the  
 invention, for which we pray that a patent  
 may be granted to us, and the method by  
 which it is to be performed, to be  
 particularly described in and by the  
 following statement:—

This invention relates to sack comprising  
 an inner envelope of porous material, such  
 as extensible paper, and an outer plastics  
 envelope.

Such a sack is already known. When  
 filled with fine powdery materials, which  
 contain a certain quantity of air, the  
 entrapped air should be allowed to escape  
 so that a larger quantity of powdery  
 material can be packed in the sack and the  
 filling operation can take place as fast as  
 possible.

With the known sack the air escaping  
 through the wall of the inner envelope of  
 for instance extensible paper, has to flow  
 out through the space between the inner  
 and outer envelopes. The disadvantage is  
 that the air cannot escape fast enough due  
 to the fact that the walls of the inner  
 and outer envelopes engage each other and  
 are pressed against each other more and  
 more during the filling operation. A further  
 disadvantage is that such sacks cannot be  
 used in a form having a valve or other  
 special filling opening at one side of an  
 otherwise closed top, which opening allows  
 the insertion of a filling tube.

Such a filling opening would not allow an  
 adequate escape of air through the space  
 between the inner and outer envelopes.

A further disadvantage is that the inner  
 paper envelope has to contribute to the  
 strength of the entire sack due to the fact  
 that the plastics film used for the outer sack  
 has insufficient tensile and tear strength.

According to the present invention  
 there is provided a sack comprising an inner  
 envelope of porous material and an outer  
 envelope of laminated plastics material  
 including two mono axially stretched films,

the orientation direction of one film being  
 at an angle to the direction of orientation of  
 the other film, and the outer envelope being  
 perforated. The plastics material may be  
 polyethylene and a suitable laminate of  
 mono-axially stretched films of  
 polyethylene is already known in the trade  
 under the trademark "VELERON"<sup>®</sup>. This  
 material can be perforated and from this  
 perforated material the outer envelope is  
 made. This material itself is sufficiently  
 strong to take up all loads. Due to the  
 perforations, which do not affect the  
 strength, the air can immediately escape.  
 This again allows the use of the above-  
 mentioned special filling opening. The  
 laminate used may have a thickness of 75 to  
 120 micron and preferably has a thickness  
 of 100 micron. The micro-perforation  
 applied to the laminate is a regular  
 pattern of perforations each having  
 a diameter of 0.1 mm with a spacing of 5  
 mm in one direction and 10 mm in the  
 perpendicular direction. Other dimensions  
 and arrangements of the perforations are  
 possible of course.

The inner envelope may be made of a  
 light crepe paper of for instance 75 g/m<sup>2</sup>,  
 but other papers may be used with a higher  
 or lower weight, such as 90 g/m<sup>2</sup> or 110  
 g/m<sup>2</sup>.

Preferably, the construction of both  
 envelopes is such that the seams of the  
 inner and outer envelopes do not coincide,  
 but are spaced e.g. approximately 100 mm  
 apart. The inner and outer envelopes are  
 spot glued to each other at the bottom and  
 top of tube lengths from which the  
 envelopes are made. The number of top  
 and bottom glue connections usually is 10  
 and they are equally spaced. Their position  
 should be chosen as close as possible to the  
 top and bottom, the distance from top and  
 bottom being usually 50 mm. Between top  
 and bottom there should be no connection  
 along the length of the sack to allow the  
 extensible paper of the inner sack to extend  
 under impact load without tearing.

The glue used can be ordinary paper glue  
 such as starch, but polyvinyl acetate glue is

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- preferred for inner and outer envelope connections.  
A sack embodying the invention is shown in the accompanying drawing provided with a special filling opening. The perforations of the outer envelope, and the porous paper material of the inner envelope, and the seam connections are shown in the drawing.
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- 10 WHAT WE CLAIM IS:—  
1. A sack comprising an inner envelope of porous material and an outer envelope of laminated plastics material including two mono axially stretched films, the orientation direction of one film being at an
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- angle to the direction of orientation of the other film, and the outer envelope being perforated.  
2. A sack according to claim 1, wherein the outer envelope is made of polyethylene.  
3. A sack according to claim 1, substantially as herein described.  
4. A sack substantially as herein described and illustrated in the accompanying drawing.
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1462941 COMPLETE SPECIFICATION

1 SHEET

*This drawing is a reproduction of  
the Original on a reduced scale*